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MEMORANDUM

TO: Patrick Goddard, Director of Facilities, Town of Lexington
Paul B. Ash, Ph.D., Superintendent, Lexington Public Schools

FROM: Matt A. Fragala, M.S., C.I.H., Senior Scientist
Taeko Minegishi, M.S., Senior Scientist
David L. MacIntosh, Sc.D., C.I.H., Chief Science Officer

DATE: August 16, 2013

RE: Update on Indoor Air Samples Collected on August 1, 2013, at Estabrook Elementary School, Lexington, Massachusetts (EH&E 18536)

Environmental Health & Engineering, Inc. (EH&E) provides this memorandum that describes the monitoring and analysis for polychlorinated biphenyls (PCBs) in indoor air of Estabrook Elementary School (Estabrook). Air samples results from June 27, 2013, indicated an indoor air PCB concentration of 348 nanograms per cubic meter (ng/m^3) in room 4, which is above the follow-up assessment threshold concentration of 173 ng/m^3. The analytical laboratory reported that the June 27, 2013, sample result was biased high due to matrix interference. To obtain further information on conditions in room 4, three additional air samples were collected in room 4 on August 1, 2013. The ventilation system serving room 4 was evaluated further during this timeframe as well. The results of all PCB indoor air concentrations measured in room 4 since fall of 2011 (post mini-walls) are presented in Table 1.

The August 1, 2013, sampling results indicate that the indoor air PCB concentration in room 4 was 252 ng/m^3 in the center of the classroom and 178 ng/m^3 in back of the room on the corridor side. These results are all lower than 348 ng/m^3 measured on June 27, 2013. All field and laboratory quality control criteria were met for the samples collected on August 1, 2013. The duplicate sample collected in room 4 indicated a concentration of 255 ng/m^3, which agreed well with the concentration of 248 ng/m^3 indicated by the primary sample. The duplicate sample serves a quality control function for precision of indoor air measurements made for the project.

Table 1 Air Sample Results for Total Polychlorinated Biphenyls in Room 4, Estabrook Elementary School, 117 Grove Street, Lexington, Massachusetts, November 4, 2010 – August 1, 2013

School Year	Sample Date	Temperature (°F)	PCB Concentration (ng/m^3)
2010-2011	11/04/2010	48.5	105
	05/21/2011	71.1	217
	06/09/2011	78.9	152
2011-2012	10/07/2011	57.5	114
	04/17/2012	80.0	120
2012-2013	10/20/2012	72.3	212
	12/27/2012	44.0	150
	04/19/2013	70.3	257
	06/27/2013	68.6	348
	08/01/2013	77.9	252*
	08/01/2013	77.9	178**

ng/m^3 nanograms per cubic meter
°F degrees Fahrenheit

* Average of sample and duplicate
** Measured in the back of the room near the wall along the corridor

SCHOOL YEAR AVERAGE CONCENTRATION

As stated in the operation and maintenance (O&M) plan, the temperature set-point for the classrooms was 68 degrees Fahrenheit (°F) during school year 2012-2013. The school year average concentration for room 4 was calculated as the time-weighted average concentration for the cooling and heating periods. In room 4, four samples were collected when the outdoor average temperature was above 68 °F (cooling mode) and averaged 267 ng/m^3. One sample was collected when the outdoor average temperature was below 68 °F (heating mode) and the concentration was 150 ng/m^3. During the 2012-2013 school year, 17% of the days were above 68 °F and in cooling mode and the temperature on 83% of the days correspond to the heating mode. Based on these measurements, the school year average indoor air PCB concentration in room 4 was 170 ng/m^3.

In accordance with the O&M plan, the unit ventilators have been inspected periodically and outdoor air flow rates have been confirmed to be within the target range throughout the school year. In addition, application of additional sealant has been applied to the previously encapsulated surfaces of the mini-wall assemblies in rooms 4, 6, 22, 24, and 25. Further, PCBs were not detected above the detection limit of 0.5 micrograms per 100 square centimeters (µg/100 cm^2) in any of the 20 surface locations sampled on June 27, 2013, in these five classrooms and in all cases comply with criterion set forth by the U.S. Environmental Protection Agency of 1 µg/100 cm^2.

In summary, EH&E finds that concentrations of PCBs in indoor air of room 4 remain below the school-year average guideline value of 230 ng/m^3. EH&E also notes that the highest

concentrations of PCBs measured following full encapsulation of exterior walls in the school were observed in 2013. The next full round of sampling is planned for October 2013.

If you have any questions or comments regarding this memorandum, please feel free to contact us at 1-800-TALK EHE (1-800-825-5343).

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